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(71) Applicant

Kaltenbach and Voigt

GmbH and Co

Bismarckring 39

7950 Biberach Riss

Federal Republic of

Germany

(72) Inventor

Jurgen Hoffmeister

(74) Agents

Haseltine Lake and Co

Hazlitt House

28 Southampton

Buildings

Chancery Lane

London WC2A 1AT

(54) Treatment Chair

(57) There is disclosed a medical treatment chair comprising a seating part (3), a backrest part (6), drive means for adjusting the position of at least part of the chair, and finger-operated control means for controlling the operation of the drive means. The control means comprises an adjacent pair of finger-operated control members (7a, 7b) associated with the adjustable part of the chair, one of the control members being operable to switch on and off drive in one direction of adjustment of the adjustable part of the chair, and the other control member being operable to switch on and off drive in an opposite direction of adjustment. The control members (7a, 7b) may be side by side as shown on the left hand side of Fig. 1 or back to back

as shown on the right hand side of Fig. 1.

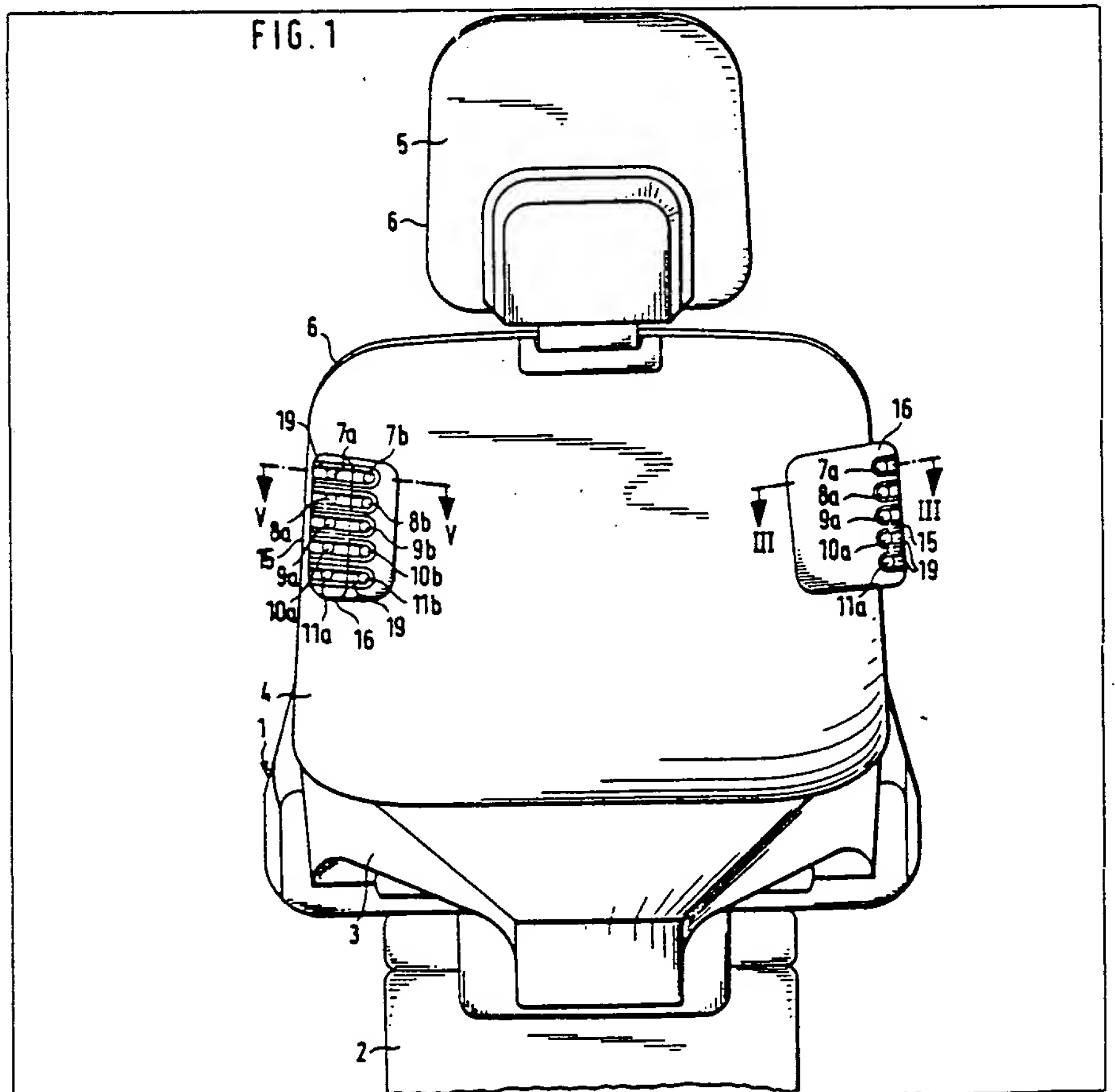
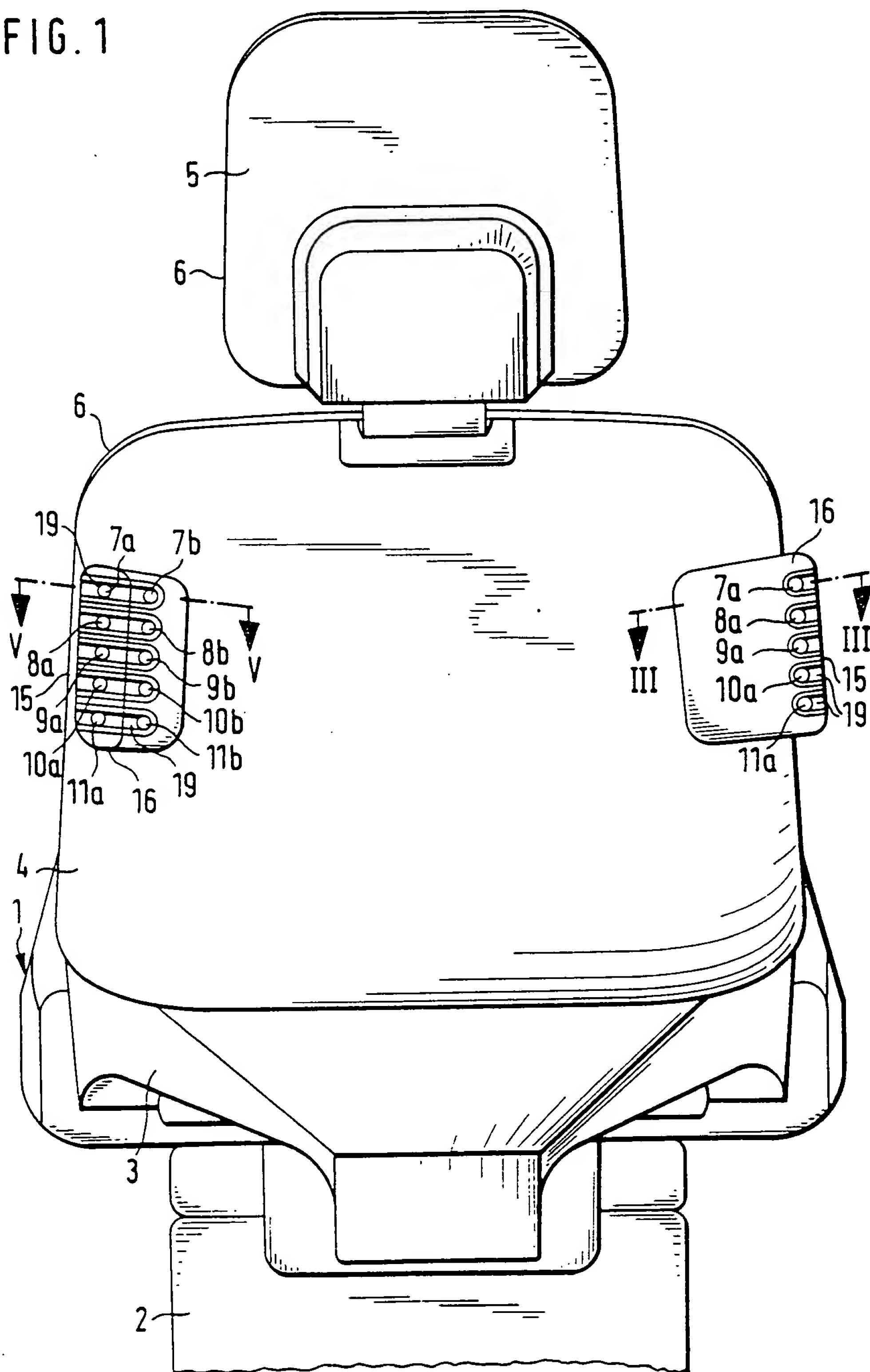
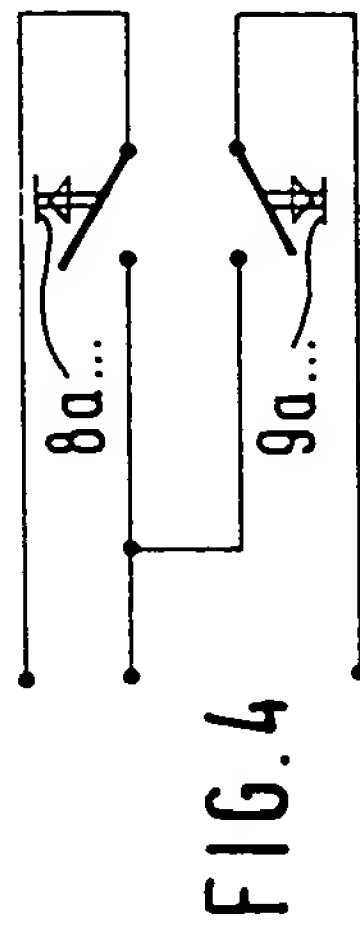
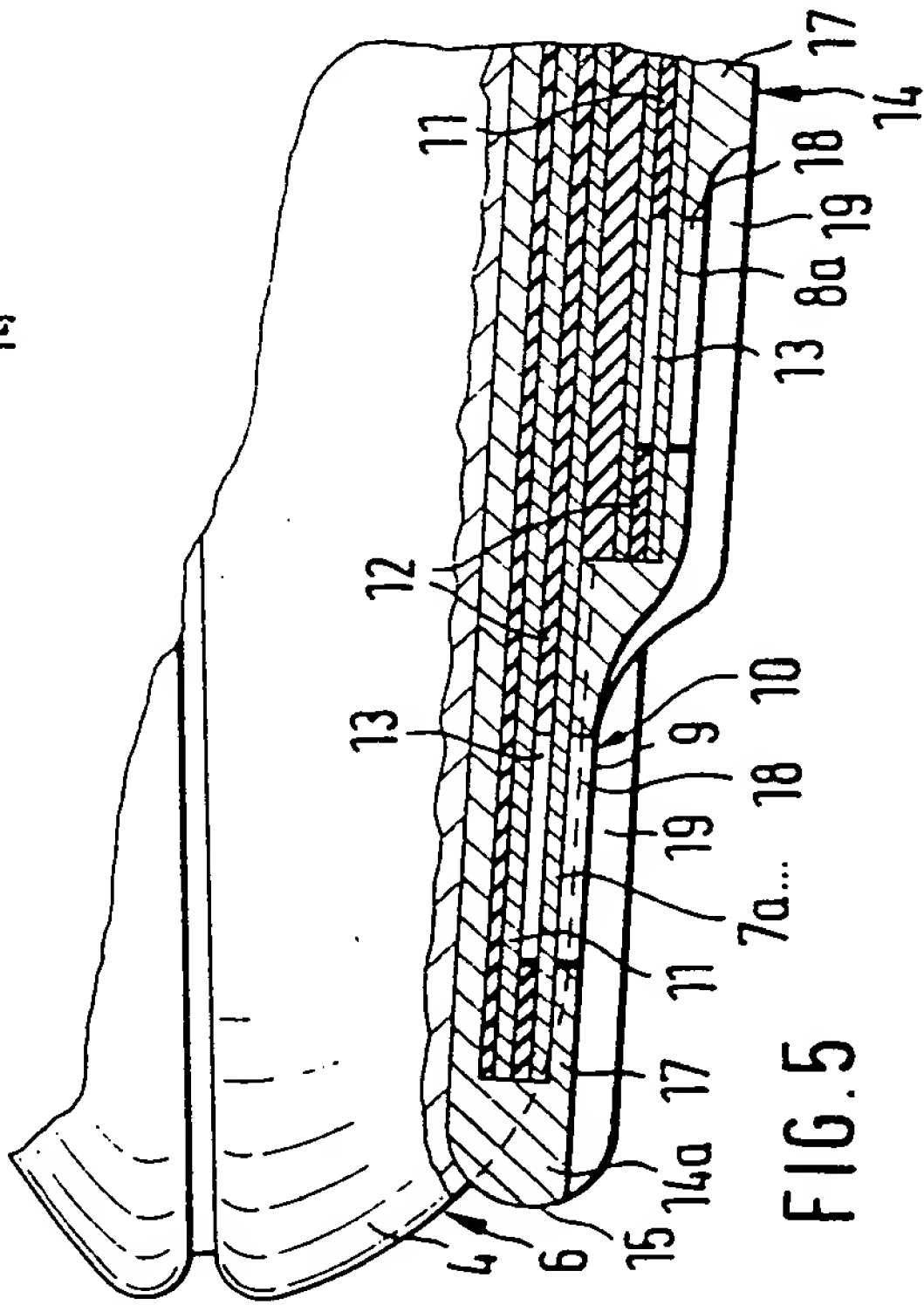
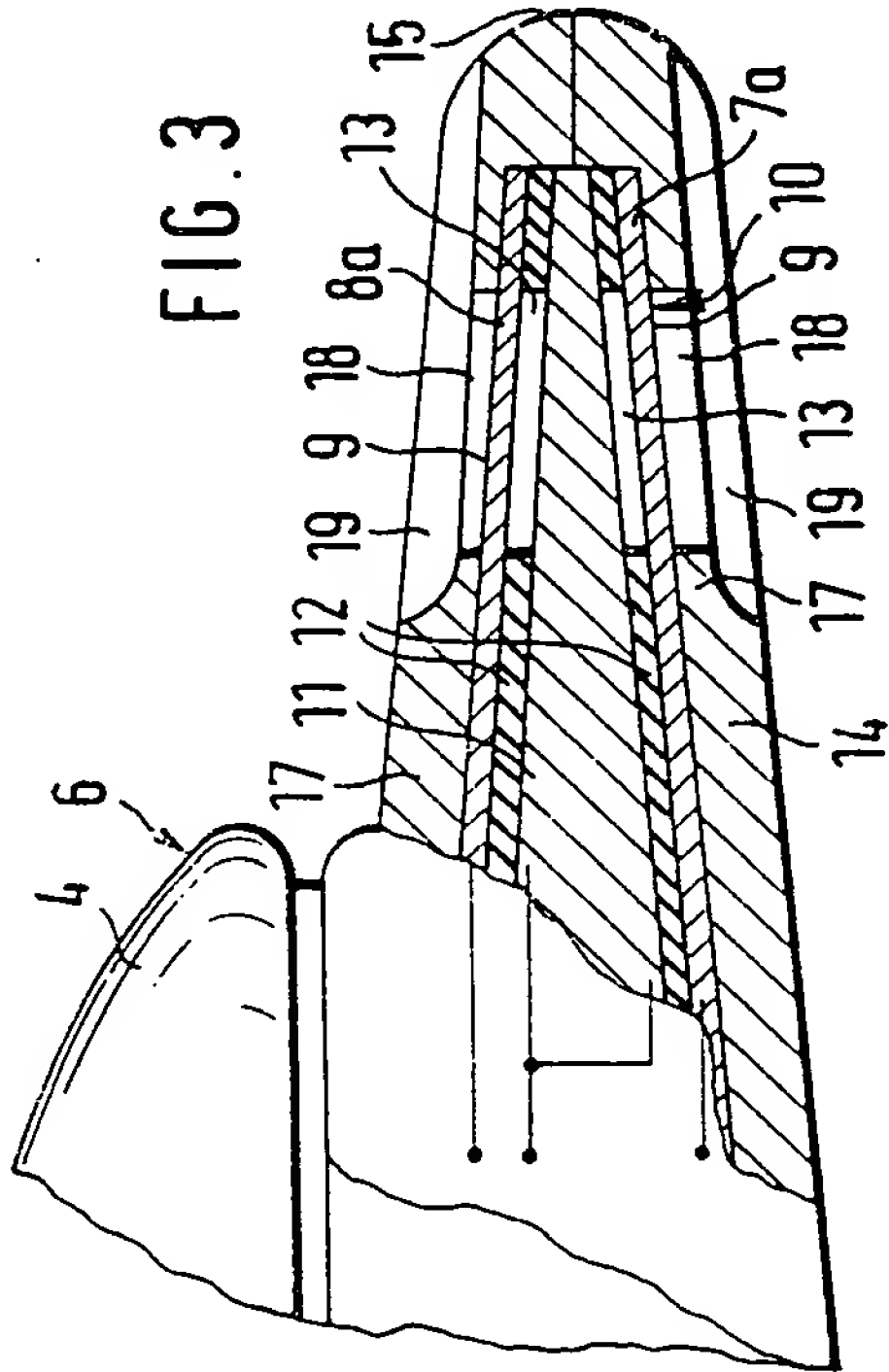
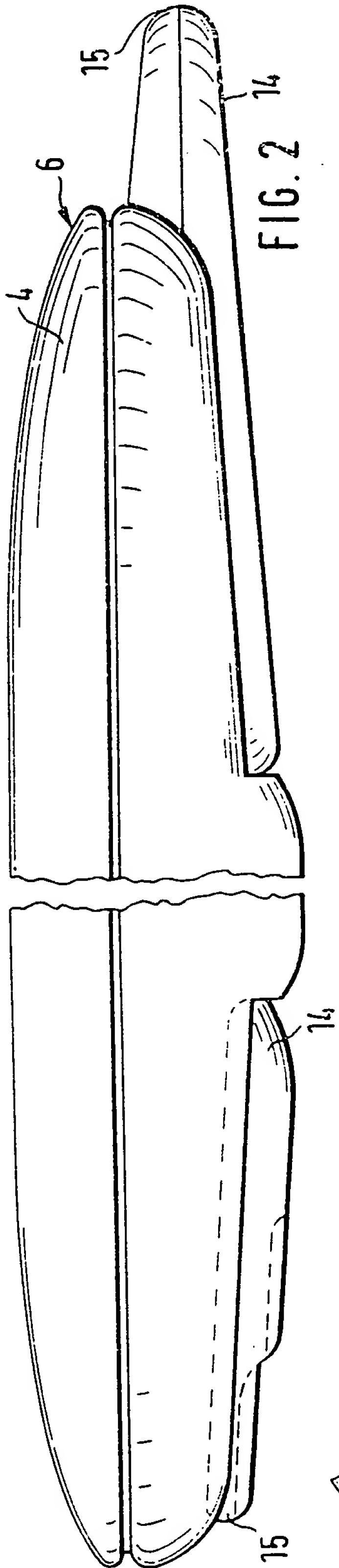


FIG. 1





SPECIFICATION

Treatment chair

- 5 This invention relates to a treatment chair such as a medical treatment chair comprising a seating part, a backrest part, drive means for adjusting at least part of the chair, and finger-operated control members for controlling the operation of the drive means.

Examples of possible adjustments of the chair parts and, as the case may be, parts of other devices, are as follows: bodily up- and downwards movement of the chair (i.e. the seating part and the backrest part), up- and downwards movement of the headrest, back- and forwards pivoting of the backrest and/or headrest, pivoting the chair and backrest to and fro around a longitudinal and/or transverse axis, movement of the chair and back in and out of a pre-programmed chair setting, letting pressure means such as compressed air in and out of inflatable cushioning on the chair, up- and downwards movement of a medical, e.g. dental instrument holder, switching on and off the water supply to a for example dental mouthwash-glass filling device, switching on and off the water supply of a for example dental spittoon rinsing device etc. The arrangement of the control members on the back of the treatment chair has proved to be successful, since the person administering treatment, who stands in the immediate vicinity of the chair and faces the chair, which is situated in one and the same set position while a particular treatment process is being carried out, can comfortably reach the control members due to the immediate vicinity of the chair and the fact that he or she is facing it, and can comfortably operate the control members due to the set position of the chair, which would not be the case if the control members were arranged in any other place, e.g. on a dental instrument holder of a dental stand or similar.

Treatment chairs of the above type are known for example from German registered designs 70 31 684, 71 22 985 and 76 17 190. Common to all these known treatment chairs is the fact that the control members (in the form of rockers, slides and rotary slides, which can be moved out of a zero position) effect, when operated in one direction, the switching on of the corresponding drive in one direction of adjustment, and when operated in the other direction, switch on the corresponding drive in the other direction of adjustment. It has now been shown that it is relatively difficult for the operator to move the relevant control member in the correct direction in the sense of the desired direction of adjustment of the part of the chair or instrument. The reason for this would seem to lie in the fact that the significance of a certain direction of movement of a control member

permitting movement in two different directions is difficult to imagine and is therefore also difficult to remember. The result of this is that movements of the control member in the wrong direction, i.e. incorrect switchings, are carried out, and therefore adjustments of the chair parts or instruments in the wrong directions and thus the selection of unwanted positions.

- 75 The present invention has been developed primarily (though not exclusively) with a view to provide a treatment chair of the above type, in which the advantage is maintained of being able to reach and operate the control members comfortably and in which, furthermore, the danger of incorrect switchings and therefore of incorrect, unwanted adjustments of the adjustable parts is for the most part avoided.

- 85 According to the invention there is provided a treatment chair, such as a medical treatment chair, comprising a seating part, a backrest part, drive means for adjusting the position of at least part of the chair, and finger-operated control means for controlling the operation of the drive means:

wherein the control means comprises an adjacent pair of finger-operated control members associated with the adjustable part of the chair and each operable to control the operation of the drive means so as to adjust said part of the chair in a respective one of two opposite directions of adjustment.

- The advantages which can be achieved by an embodiment of the invention are to be seen essentially in that - in spite of the fact that the particularly favourable arrangement, in respect of being easy to reach and operate, of the control members on the back of the treatment chair is maintained - the desired, i.e. the correct direction of adjustment is guaranteed to a considerably greater extent than in the known treatment chairs due to the respectively paired adjacent arrangement of two control members, of which one serves to switch on and off the drive in one direction of adjustment on one of the chair parts, and the other serves to switch on and off the drive in the other direction of adjustment of the part, since it has been shown to be relatively easy for the operator to form a mental picture of and to remember the varying significance of the two control members in paired adjacent arrangement, whereby incorrect switchings with the said undesirable results caused by this are avoided.

- Two control members in paired adjacent arrangement, used respectively for switching on and off the drive in one direction of adjustment and to switch on and off the drive in the other direction of adjustment, are known *per se* from the publication "KaVo REGIE" of the Kaltenbach and Voigt company, which are arranged on a dental instrument holder which can be moved up and

down. Apart from the fact that in this known case only a single part of the device, namely the dental instrument holder, is movable up and down and therefore also only a single pair of control members is provided, whereas the invention is preferably concerned with a treatment chair with several adjustable parts and therefore also with several pairs of control members, the known control member arrangement cannot contribute to achieving the aim of the invention, since the instrument holder is normally positioned opposite the back of the treatment chair and is more awkward for the operator to reach than the back of the treatment chair. Furthermore, the instrument holder is often adjusted from one set position into the other, so that locating and operating the control members proves to be more difficult than in the case of the arrangement of the control members on the back of the treatment chair, which remains in one and the same set position while treatment is being carried out.

25 BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 is a rear view of a medical treatment chair with a back consisting of a backrest and headrest, with two different control member arrangements;

30 *Figure 2* is an enlarged plan view of the backrest of the treatment chair shown in Fig. 1, with the headrest omitted;

Figure 3 is a section through line III-III in Fig. 1 on an enlarged scale, relating to the first construction of the control member arrangements;

Figure 4 is a circuit diagram of the control member arrangement shown in Fig. 3, and

40 *Figure 5* is a section through line V-V in Fig. 1 on an enlarged scale, relating to the second construction of the control member arrangements.

45 DESCRIPTION OF PREFERRED EMBODIMENTS

The treatment chair 1 comprises essentially a chair pedestal 2, a seat support 3 for the seating part (not shown) and a treatment chair back part, indicated as a whole with 6, consisting of a backrest 4 and a headrest 5. Of the above chair parts 2 to 6, some or all can be adjustable by means of a conventional, electrical, pneumatic or hydraulic drive (not shown), which can be switched on and off.

55 To switch on and off each drive associated with the respective chair parts 2 to 6 in one direction of adjustment of the relevant chair part, and to switch on and off each drive in the other direction of adjustment two finger-operable control members 7a, 7b; 8a, 8b; 9a, 9b; 10a, 10b; 11a, 11b, are in respectively paired adjacent arrangement on the back 6 of the treatment chair, namely on the headrest 5 and/or, as shown, on the backrest 4. According in each case to the number of adjustable

parts, more pairs of control members can also be provided.

As can be seen from the drawing, the control members of one pair of control members (7a, 7b;...) in each case are of different designs in respect of their finger-operated surfaces 9. The finger-operated surfaces 9 of one respective pair of control members (7a, 7b;...) can also have different profilings; or else the finger-operated surfaces 9 of one respective pair of control members (7a, 7b;...) are arranged according to Figs. 3 and 5 on different levels on the back 6 of the treatment chair. In the case of the embodiment according to Fig. 3, the finger-operated surfaces 9, arranged on different levels, of one respective pair (7a, 7b;...) of control members are in opposite arrangement, and in the case of the embodiment according to Fig. 5, in adjacent arrangement.

The control members (7a, 7b;...) according to Figs. 3 and 5 are formed by push button or keying switches 10. Particularly if the finger-operated surfaces 9 of each respective pair (7a, 7b;...) of control members are provided in opposite arrangement as according to Fig. 3 (i.e. one of each side of the seat back) this results in the advantage of finger pressure on one of the two opposite-lying push button or keying switches corresponds in each case to the desired directions of adjustment of the parts or chair parts to be adjusted, e.g. the application of finger pressure to one of the two opposite-lying push button or keying switches brings about tilting of the back 6 in the direction of the finger pressure; application of finger pressure to the other, i.e. the opposite push button or keying switch brings about tilting of the back 6 in the opposite direction, that is in the direction of finger pressure in this case too.

As can be seen, the push button or keying switches 10 are formed by foil switches. This gives the advantage that inconvenient mechanical parts and large switch housings become unnecessary. Switching movements are also kept to a minimum. The flat switch design made possible thereby is particularly suitable for modern treatment chair backs of a flat design.

The embodiment according to Fig. 3 is characterised by the fact that a plate-like, electrically conductive, rigid contact piece 11 is arranged between the two opposite finger-operated surfaces 9 formed in each case by an electrically conductive, flexible foil switch, whereby there is arranged in each case between the two foil switches and the contact piece 11 and electrically non-conductive insulating plate 12, which has an aperture 13 to permit contact of the foil switch and the contact piece resulting from finger pressure. The circuit diagram relating to this is shown in Fig. 4. As can be seen from the drawing, the finger-operated surfaces 9 are arranged in a

switch panel 14 secured to the back 6 of the treatment chair. In the case of the embodiment according to Fig. 3, the free edge 15 of the switch panel 14 further away from the treatment chair 1 projects laterally out of the treatment chair back 6, whereas in the embodiment according to Fig. 5, the free edge 15 of the switch panel 14 further away from the treatment chair 1 is essentially flush with the edge 16 of the treatment chair back 6.

The surface 17 of the switch panel 14 covering the finger-operated surfaces 9 is provided with apertures 18 giving access to the finger-operated surfaces 9, which apertures, in the embodiment according to Fig. 5, are arranged respectively opposite apertures 13 provided on the other side of the finger-operated surface 9, formed by an electrically conductive, flexible foil switch, in an electrically non-conductive insulating plate 12, whereby a plate-like, electrically conductive contact piece 11 is arranged inside the switch panel 14 on the side of the insulating plate 12 facing away from the foil switch.

Particularly for the purpose of avoiding unintentional switching processes and also to make easier the task of location by touch, the apertures 18 are provided in respective groove-like depressions 19 arranged in the surface of the switch panel 14. In order to make the location even more simple, the groove-like depressions 19 extend respectively up to the edge 15 of the switch panel 14 or of a section 14a of the switch panel 14 facing away from the treatment chair 1.

CLAIMS

1. A treatment chair, such as a medical treatment chair, comprising a seating part, a backrest part, drive means for adjusting the position of at least part of the chair, and finger-operated control means for controlling the operation of the drive means:

wherein the control means comprises an adjacent pair of finger-operated control members associated with the adjustable part of the chair and each operable to control the operation of the drive means so as to adjust said part of the chair in a respective one of two opposite directions of adjustment.

2. A treatment chair according to claim 1, wherein the finger-operated surface of each control member has a unique profile.

3. A treatment chair according to claim 1 and including a plurality of chairs of adjacent control members, wherein the finger-operated surfaces of the control members in each pair are unique to that pair.

4. A treatment chair according to claim 3, wherein said pairs of control members are arranged at different levels on the backrest part of the chair.

5. A treatment chair according to claim 4, wherein the finger-operated surfaces of the control members of each pair are arranged

adjacent to each other on one side of the backrest part of the chair.

6. A treatment chair according to claim 4, wherein the finger-operated surfaces of the control members of each pair are arranged on opposite sides of the backrest part of the chair.

7. A treatment chair according to claim 1, wherein each control member comprises a push-button or keying switch.

8. A treatment chair according to claim 7, wherein each switch comprises a foil switch.

9. A treatment chair according to claim 6, wherein each pair of control members comprises a plate-like electrically conductive contact piece arranged between two opposed finger-operated surfaces, each of said surfaces being formed of an electrically conductive flexible foil switch, and a respective electrically non-conductive insulating plate arranged between said contact piece and each foil switch and formed with an aperture to permit electrical contact between the foil switch and said contact piece upon the application of finger pressure to the respective control member.

10. A treatment chair according to claim 3, wherein the finger-operated surfaces of the control members are arranged in a switch panel secured to the backrest part of the chair.

11. A treatment chair according to claim 10, wherein a free edge of said panel projects laterally from the backrest part of the chair.

12. A treatment chair according to claim 10, wherein a free edge of said panel is substantially flush with a side edge of the backrest part of the chair.

13. A treatment chair according to claim 10, wherein the switch panel has a cover which is formed with apertures providing access to the finger-operated surfaces of the control members.

14. A treatment chair according to claim 13, wherein each control member comprises an electrically conductive flexible foil switch which is formed by an apertured electrically non-conductive insulating plate, and a plate-like electrically conductive contact piece arranged on the side of said insulating plate remote from the respective finger-operated surface, and wherein said apertures in the panel overlie the apertures in said insulating plate.

15. A treatment chair according to claim 13, wherein each aperture in the panel is arranged in a respective groove-like depression in the cover of the panel.

16. A treatment chair according to claim 15, wherein the groove like depressions extend up to a free edge of the panel, or to a portion of the panel facing away from the chair.

17. A treatment chair according to claim 1 and substantially as hereinbefore described

with reference to, and as shown in any one of the embodiments illustrated in the accompanying drawings.

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